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DESCRIPTIONS OF SANDY SOILS
IN CLEARED AREAS
OF COASTAL KENT AND
SOUTHERN NORTHUMBERLAND COUNTIES, N. B.

Research Branch
Canada Department of Agriculture
and
New Brunswick Department of Agriculture

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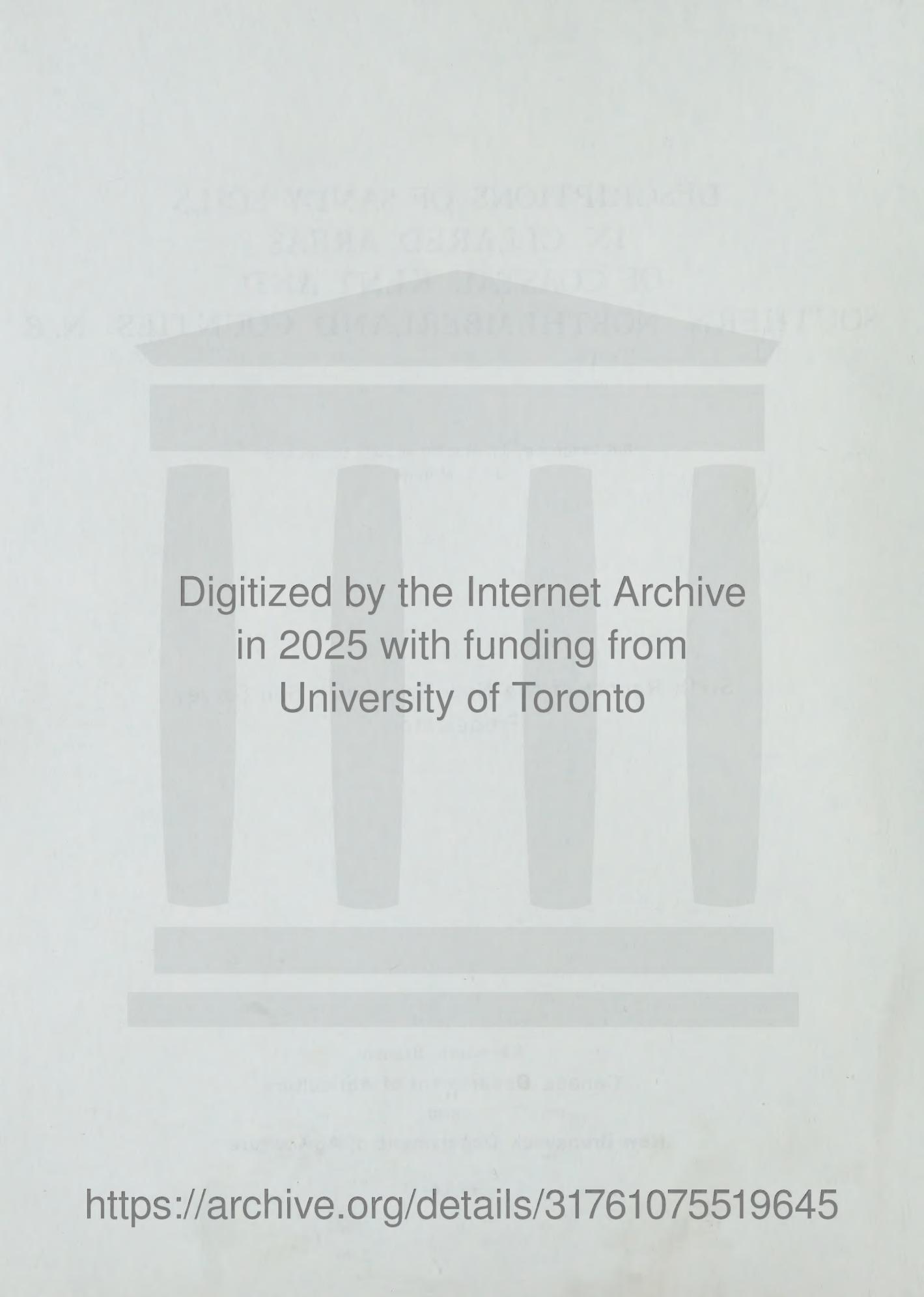
DESCRIPTIONS OF SANDY SOILS
IN CLEARED AREAS
OF COASTAL KENT AND
SOUTHERN NORTHUMBERLAND COUNTIES, N. B.

K.K. Langmaid, J.K. MacMillan, J.G. Losier and
J.F.G. Millette

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INTRODUCTION

The coastal areas of central-eastern New Brunswick were examined in detail to determine if there was enough suitable soil to grow tobacco commercially. Only the cleared areas from Baie du Vin, Northumberland County, to Shediac Bridge in Kent County, and within 1 1/2 to 3 miles of the shore line were examined (Figure 1). This is where the climate is modified by the water and there are more than 120 frost-free days.

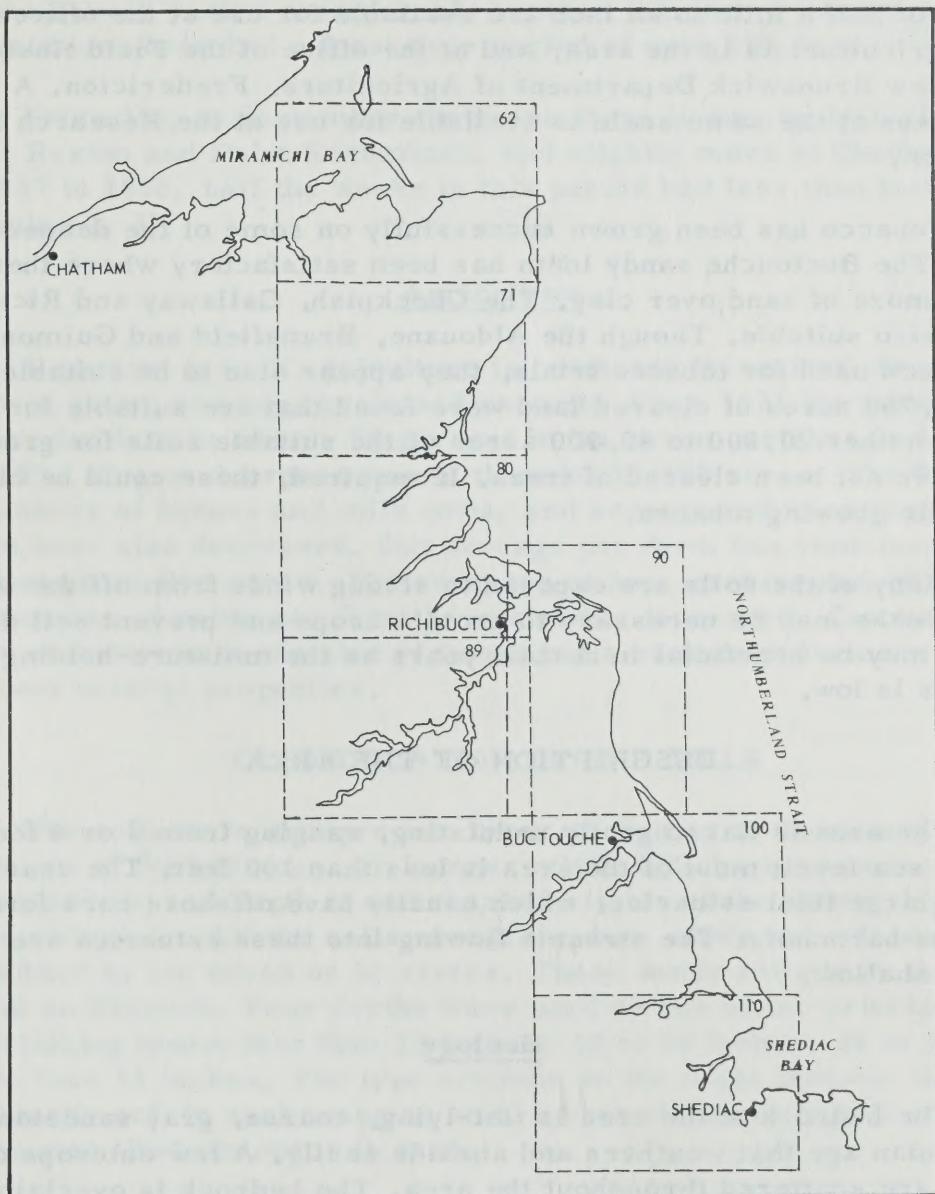


Figure 1.—Index to soil maps of the surveyed area.

Though all cleared areas were examined, only sandy, well-drained soils were mapped and classified. Cleared areas with imperfectly or poorly drained soils, and those with fine-textured soils, were not surveyed. The surveyed areas were mapped on aerial photographs on a scale of four inches to one mile, and this information was transferred to planimetric maps on a scale of two inches to one mile.

Maps are not provided with the report. Sets of black-and-white maps at a scale of half a mile to an inch are available for use at the offices of the district agriculturists in the area, and at the office of the Field Husbandry Branch, New Brunswick Department of Agriculture, Fredericton. A set of colored maps at the same scale is available for use at the Research Station, Fredericton.

Tobacco has been grown successfully on some of the deeper soils of the area. The Buctouche sandy loam has been satisfactory where there is 26 inches or more of sand over clay. The Chockpish, Gallaway and Richibucto soils are also suitable. Though the Aldouane, Bransfield and Guimond soils have not been used for tobacco trials, they appear also to be suitable. A total of 22,750 acres of cleared land were found that are suitable for growing tobacco. Another 20,000 to 40,000 acres of the suitable soils for growing tobacco have not been cleared of trees. If required, these could be cleared and used for growing tobacco.

Many of the soils are exposed to strong winds from off the water, and windbreaks may be necessary to protect crops and prevent soil drifting. Irrigation may be beneficial in certain years as the moisture-holding capacity of the soils is low.

DESCRIPTION OF THE AREA

The area is flat to gently undulating, ranging from 3 or 4 feet to 150 feet above sea level; most of the area is less than 100 feet. The coastline is broken by large tidal estuaries, which usually have offshore bars forming lagoons, or barochois. The streams flowing into these estuaries are usually small and shallow.

Geology

The bedrock of the area is flat-lying, coarse, gray sandstone of Pennsylvanian age that weathers and abraids easily. A few outcrops of reddish sandstone are scattered throughout the area. The bedrock is overlain by red clay loam till, stone-free red clay, or sand; most of the till and the clay are also overlain by sand, which is derived from the sandstone.

Climate

The climate of the area is strongly influenced by the waters of Northumberland Strait. This water is shallow and warms up rapidly in late May and June. It retains its heat in the fall, prolonging the frost-free period. Temperature records are taken at two weather stations in or near the area: Chatham and Rexton. These show frost-free periods of 130 and 121 days respectively (Table 1). Temperature records taken at a number of stations during the survey varied considerably between inland and coastal areas. Coastal stations have had a frost-free period of over 120 days.

From May to September there are three inches or less of rain per month at Rexton and Point Escuminac, and slightly more at Chatham (Table 1). From 1947 to 1960, half the weeks in this period had less than half an inch of rain (Tables 2, 3).

Agriculture

A general type of agriculture is practised throughout the area. The main crops grown are hay, grain and pasture. Since 1921 the number of farms has declined by nearly 50 percent in the seven parishes included in the survey. The largest decrease was in those of 50-100 acres. The farm population, numbers of horses and milk cows, and acreages of wheat and potatoes per farm have also decreased. Oat acreage per farm has remained nearly constant at about five acres. The acreages of hay, pasture and improved land and the number of cattle per farm have steadily increased. Census figures do not show an increase in the size of farms but a number of farmers interviewed own or rent several properties.

CLASSIFICATION OF THE SOILS

The soils were grouped into types according to the nature and arrangement of the horizons, or layers; origin and characteristics of the parent materials; and depth to and characteristics of the underlying impervious materials. All the soils except the dune sands were deposited in water, either by the ocean or by rivers. These sandy soils vary in depth to clay loam or bedrock. Four depths were used as one of the principal bases for establishing types: less than 18 inches, 18 to 24 inches, 24 to 36 inches and more than 36 inches. The type symbols on the maps indicate the common depth of sandy soil in each mapping unit, but small areas of soil of different depth are also likely to occur in each.

All the water-deposited soils belong to the Podzol great group. Most of them are Orthic Podzols, but five are Ortstein Podzols: the St. Charles, Caissie, Babineau, Kouchibouguac and Cocagne. The soils in the sand dunes are Orthic Regosols. Depth to the underlying impervious material is critical in growing high-quality tobacco.

Table 1.—Various Weather Records for Weather Stations in or near the Surveyed Area

Years of records	May	June	July	Aug.	Sept.	Year
Chatham						
Mean precipitation Inches	53	2.98	3.68	3.03	3.49	3.30
Average mean daily temperature, °F	53	49.1	59.5	66.5	64.4	56.0
Point Escuminac						
Mean precipitation Inches	64	2.77	2.87	2.25	2.80	3.09
Average mean daily temperature, °F	—	—	—	—	—	—
Rexton						
Mean precipitation Inches	25	2.74	2.75	2.83	2.97	3.18
Average mean daily temperature, °F	25	48.8	59.2	66.7	65.0	56.2
Frost-free period, days						
	Shortest		Longest		Average	
Chatham	93		170		130	
Rexton	84		148		121	

Table 2.—Numbers of years in which various amounts of rain fell at Rexton in each week from May to September, 1947-1960

Week		Inches					
		0	.01-.24	.25-.49	.50-.99	1.00-1.99	2.00
May	1-8	3	5	1	5	-	-
	8-15	2	3	2	2	4	1
	15-22	5	2	2	2	3	-
	22-29	3	1	2	2	4	2
May 29-June 5		1	2	1	7	2	1
June	5-12	2	2	1	4	3	2
	12-19	3	3	2	2	3	1
	19-26	1	5	1	5	1	1
June 26-July 3		2	1	3	2	4	2
July	3-10	5	3	-	3	3	--
	10-17	4	-	4	-	4	2
	17-24	-	2	2	6	3	1
	24-31	1	6	2	1	3	1
July 31-Aug. 7		2	6	1	5	-	-
Aug.	7-14	4	4	1	1	3	1
	14-21	2	3	1	5	1	2
	21-28	-	4	1	6	2	1
Aug. 28-Sept. 4		1	4	2	5	2	-
Sept.	4-11	3	6	2	2	1	-
	11-18	3	3	1	1	5	1
	18-25	1	1	2	6	2	2
Sept. 25-Oct. 2		7	3	1	2	1	-

Table 3.—Numbers of years in which various amounts of rain fell at Chatham
in each week from May to September, 1947-1961

Week		Inches					
		0	.01-.24	.25-.49	.50-.99	1.00-1.99	2.00
May	1-8	0	8	1	4	2	-
	8-15	1	4	5	3	1	1
	15-22	1	4	5	1	3	1
	22-29	3	0	-	5	5	2
May 29-June 5		0	3	3	2	6	1
June	5-12	0	5	2	4	4	-
	12-19	1	3	4	4	2	1
	19-26	0	2	1	5	6	1
June 26-July 3		0	3	3	3	4	2
July	3-10	2	3	4	4	2	-
	10-17	2	2	4	3	2	2
	17-24	0	3	4	7	1	-
	24-31	1	3	7	-	4	-
July 31-Aug. 7		1	5	2	4	2	1
Aug.	7-14	1	2	5	7	-	-
	14-21	0	3	2	5	2	3
	21-28	1	2	4	5	2	1
Aug. 28-Sept. 4		0	5	3	4	2	1
Sept.	4-11	1	10	2	-	1	1
	11-18	1	4	1	4	5	-
	18-25	0	4	5	-	5	1
Sept. 25-Oct. 2		2	6	1	3	1	1

The soils are briefly described as follows:

1. Soils less than 36 inches deep

A. Yellowish-brown to brown sandy loam overlying reddish-brown clay loam

Less than 18 inches deep

Barrieau sandy loam

18 - 24 inches deep

Bretagneville sandy loam

Bretagneville sandy loam, gravelly phase

St. Charles sandy loam, B horizon cemented

24 - 36 inches deep

Buctouche sandy loam

B. Yellowish-brown to gray-brown sandy loam overlying soft, coarse-grained sandstone

Less than 18 inches deep

Baie du Vin sandy loam

Baie du Vin sandy loam, gravelly phase

18 - 24 inches deep

Chockpish sandy loam

Chockpish sandy loam, gravelly phase

Chockpish sandy loam, stony phase

Caissie sandy loam, B horizon cemented

24 - 36 inches deep

Gallaway sandy loam

Gallaway sandy loam, gravelly phase

Gallaway sandy loam, stony phase

Babineau sandy loam, B horizon cemented

Babineau sandy loam, B horizon cemented, gravelly phase

C. Reddish-brown sandy loam overlying reddish-brown, yellowish-brown or gray-brown sandstone

18 - 24 inches deep

Escuminac sandy loam

24 - 36 inches deep

Bransfield sandy loam
Bransfield sandy loam, gravelly phase

2. Soils more than 36 inches deep

A. Yellowish-brown to gray-brown sand loam

Richibucto sandy loam
Richibucto sandy loam, gravelly phase
Kouchibouguac sandy loam, B horizon cemented
Kouchibouguac sandy loam, B horizon cemented,
gravelly phase

B. Reddish-brown sandy loam

Aldouane sandy loam
Aldouane sandy loam, gravelly phase

C. Yellowish-brown to gray-brown gravel

Guimond gravel
Cocagne gravel, B horizon cemented

D. Yellowish-brown to yellowish-gray drifting sand

Sand dunes

DESCRIPTIONS OF THE SOILS¹

Barrieau Sandy Loam

This soil occupies 12,826 acres, or about 28 percent of the soils surveyed. The topography varies from gently rolling to nearly flat and the highest elevation is 150 feet.

This soil is unsuitable for growing tobacco because the sandy loam is shallow over clay.

The profile of a typical cultivated soil is described as follows:

¹See Table 4 for the map numbers and symbols and acreages of the soils surveyed, and Tables 5 and 6 for the chemical and physical analyses.

<u>Horizon</u>	<u>Depth Inches</u>	
Ap	0 - 6	Brown (10YR 5/3) sandy loam; moderate, medium crumb structure; friable; boundary smooth; small, rounded fragments of sandstone; pH 4.8.
Bfh	6 - 11	Yellowish-brown (10YR 5/4) sandy loam; moderate to weak, medium granular structure; loose; lower boundary wavy, clear; pH 5.0.
Bf	11 - 15	Light-brown (7.5YR 6/4) sandy loam; weak, medium granular structure; lower boundary wavy, clear; pH 5.0.
11C	15 +	Brown (10YR 5/3) clay loam; coarse, blocky structure; sticky, plastic; a few low-contrast mottles; pH 5.0.

The clay till or marine clay is 7 to 18 inches below the surface. In shallow sola, one or both B horizons may be replaced by a B horizon of clay loam.

The fertility is low but the soil holds moisture better than many of those in the surveyed area. The organic matter content of the plowed layer is rather high (4.7 percent) and the pH is 5.0. The soil responds to lime and fertilization. The low relief prevents serious erosion.



Figure 2.—Profile of Barrieau sandy loam.

Bretagneville Sandy Loam

This soil occupies 4,043 acres, or about 9 percent of the soils surveyed. The sandy loam is 18 to 24 inches thick over clay loam.

This soil is marginal for tobacco due to insufficient depth of sandy loam.

The profile of a typical cultivated soil is described as follows:

<u>Horizon</u>	<u>Depth Inches</u>	
Ap	0 - 10	Dark-brown (10YR 3/3) sandy loam; medium crumb structure; loose; pebbles of fine sandstone; boundary smooth, abrupt; pH 6.0.
Bf	10 - 12	Yellowish-brown (10YR 5/4) sandy loam; fine granular structure; loose; a few small gravels of sandstone; lower boundary clear, wavy; pH 6.2.
BC	12 - 20	Light-brown (7.5YR 6/4) sandy loam; fine granular structure; soft; gravels of well-rounded sandstone; lower boundary wavy; pH 6.4.
IIC1	20 - 24	Brown (10YR 5/3) sandy clay loam; strong, fragmental, breaking to coarse granular structure; slightly sticky, plastic; gravels large, of angular sandstone; pH 6.6.
IIC2	24 +	Reddish-brown (5YR 4/3) gravelly clay loam; coarse, subangular blocky to blocky structure; hard, plastic, sticky; pH 5.4.

The pH may be as low as 5 for all horizons.

As the depth of sandy material changes over short distances it is usual to find Barrieau and Buctouche soils, which are different from Bretagneville soils only in depth of sandy material, included in the Bretagneville mapping unit. The solum has developed in the sandy material. The range in pH from 5.0 to 6.6 is due to applications of lime or shells and to high porosity and low exchange capacity. Where the soil has not been treated it remains acid.

This soil is poor for general farming. It holds moisture poorly and is low in fertility mainly because of its coarse texture and rapid permeability.

Gravelly Phase

The gravelly phase of this soil type occupies only 11 acres in the surveyed area. It is similar to the sandy loam except that it contains over 20 percent of gravel by volume. This may occur throughout the profile or in definite lenses. It is slightly more porous than the sandy loam.

St. Charles Sandy Loam

This soil occupies 42 acres in the surveyed area. It differs from the Bretagneville sandy loam in having a cemented (Bfhc) layer. This cemented layer restricts drainage and penetration of roots, making it unsuitable for tobacco growing, and limiting use of this soil for agriculture.

The profile of a typical cultivated soil is described as follows:

Horizon	Depth Inches	
Ap	0 - 6	Dark-brown (10YR 3/3) sandy loam; medium crumb structure; loose; lower boundary smooth; pH 5.0.
Ae	Trace-pockets	Pinkish-gray (5YR 6/2) sandy loam; weak platy structure; loose; lower boundary irregular, abrupt; pH 5.2.
Bfhc	6 - 7	Dark reddish brown (5YR 3/4) fine sandy loam; very hard, cemented; lower boundary abrupt; pH 5.4.
Bf	7 - 15	Yellowish-brown (10YR 5/4) sandy loam; fine granular structure; loose; lower boundary wavy; pH 5.4.
BC	15 - 21	Light-brown (7.5YR 6/4) sandy loam; fine granular to single-grain structure; soft; a few small gravels of gray sandstone; lower boundary wavy; pH 5.4.
IIC1	21 - 24	Brown (10YR 5/3) sandy clay loam; strong, fragmental, breaking to coarse crumb structure; very hard, slightly sticky; gravels large, of angular sandstone; pH 5.6.
IIC2	24 +	Reddish-brown (5YR 4/3) gravelly clay loam; coarse, fragmental to blocky structure; sticky, plastic; pH 5.6.

This soil is similar to the Bretagneville sandy loam in texture, color and depth of sandy material. The cemented layer is dark, the cementing material being mainly iron and some organic matter. It usually occurs just below the cultivated layer and is a well-defined horizon with abrupt boundaries.

Buctouche Sandy Loam

Buctouche sandy loam occupies 1,647 acres, or 3.6 percent of the soils surveyed. The sandy loam is 24 to 36 inches deep over reddish-brown clay loam.

This soil is very suitable for growing flue-cured tobacco. This is due to the depth of the sandy loam, its texture and porosity.

The profile of a typical cultivated soil is described as follows:

Horizon	Depth Inches	
Ap	0 - 6	Dark yellowish brown (10YR 4/4) sandy loam; weak, fine granular to single-grain structure; loose; boundary smooth; pH 5.6.
Bfh	6 - 11	Yellowish-brown (10YR 5/6) loamy sand to sandy loam; weak granular structure; loose; lower boundary irregular, clear; pH 5.6.
Bf	11 - 16	Dark yellowish brown (10YR 4/4) fine sandy loam; weak granular to single-grain structure; lower boundary wavy, gradual; pH 5.8.
Cl	16 - 28	Brown (10YR 5/3) fine sandy loam; mostly single-grain structure; loose; pH 6.2.
Cg	28 - 32	Brown (10YR 5/3) fine sandy loam; loose; mottles distinct, medium, common; pH 6.4.
IICg1	32 - 36	Dark-brown (10YR 4/3) sandy clay loam; strong granular structure; hard, slightly plastic; mottling distinct, common; pH 5.2.
IICg2	36 +	Reddish-brown (5YR 4/3) clay loam; strong platy structure; plastic, sticky; mottling distinct, common; pH 4.8.

External drainage is good and internal drainage is good to excessive in the upper part of the solum.

The soil varies greatly in depth and texture. It grades into the Bretagneville and Richibucto soils according to depth to the underlying clay loam. The texture ranges from a sandy loam to a loamy sand. The pH ranges from 5.0 to 5.8 or higher in the solum.

Baie du Vin Sandy Loam

This soil occupies 2,834 acres, or 6.2 percent of the soils surveyed. It is usually found near the present shore, but may occur up to elevations of 150 feet above sea level.

This soil is not suitable for growing tobacco due to insufficient depth of soil. The soil was formed on water-deposited sandy material over flat-lying, coarse, gray sandstone. The sandy material is 18 inches or less deep and may have been formed by wave action from the underlying bedrock. This process is evident along the exposed shores at the present time.

The profile is described as follows:

<u>Horizon</u>	<u>Depth Inches</u>	
Ap	0 - 6	Dark-brown (10YR 4/3) fine sandy loam; weak granular to single-grain structure; loose; lower boundary smooth, abrupt; pH 5.4.
Bfh	6 - 7	Strong-brown (7.5YR 5/6) fine to medium sandy loam; weak granular to single-grain structure; loose; lower boundary broken, diffuse; pH 5.2.
BC	7 - 17	Yellowish-brown (10YR 5/4) fine sandy loam; weak, fine granular to single-grain structure; lower boundary diffuse; some flat, water-rounded sandstone usually present near bottom; pH 5.0.

The bedrock of horizontally bedded, coarse, gray sandstone underlies the BC horizon. The surface of this rock is usually strongly weathered and broken and may grade from strongly weathered to unweathered.

The sandy material is about 6 to 18 inches deep. The texture ranges from fine sandy loam to medium loamy sand. The mapping unit contains pockets of Chockpish sandy loam.

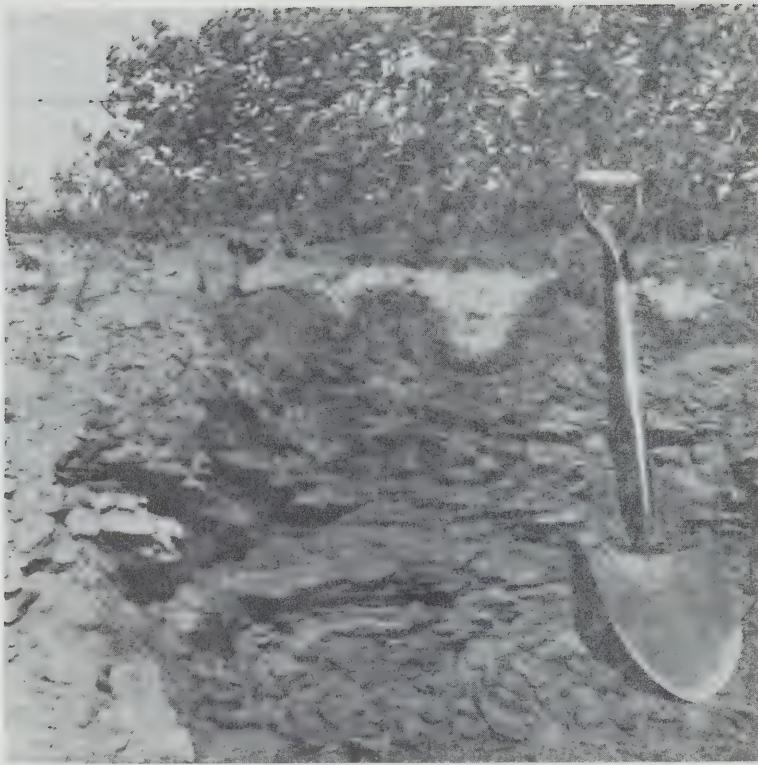


Figure 3.—Profile of Baie du Vin sandy loam.

On the unimproved soil the vegetation is poverty grass and jack pine. Productivity and fertility are very low in spite of the relatively high organic matter content. The soil is droughty and irrigation is required for high crop yields. Water erosion is no problem but surface soil drifting may be severe because of strong winds.

Gravelly Phase

This soil occupies only 342 acres. It is similar to the sandy loam except that it contains more than 20 percent of water-rounded gravel. Gravel may be present in all horizons or as lenses in one or more horizons. These lenses appear to be remnants of old beaches. Similar occurrences may be observed along modern beaches.

The soil is probably too shallow for tobacco production.

Chockpish Sandy Loam

There are 4,422 acres of this soil, or 10 percent of the soils surveyed. This soil is suitable for growing tobacco but irrigation appears to be necessary in most years. The surface soil readily drifts under the strong coastal winds.

The profile is described as follows:

Horizon	Depth Inches	
Ap	0 - 6	Brown (10YR 4/3) fine sandy loam; weak, fine granular to single-grain structure; loose, open; boundary abrupt; pH 4.8.
Ae	6 - 8	(Often absent or occurring in pockets.) Pinkish-gray (5YR 6/2) fine sandy loam; weak, fine granular to single-grain structure, showing evidence of weak plateness; firm; lower boundary wavy, abrupt; pH 4.6.
Bfh	8 - 9	Yellowish-red (5YR 4/6) fine sandy loam; moderate, medium granular structure; friable; lower boundary wavy, clear; pH 4.6.
Bf	9 - 11	Yellowish-brown (10YR 5/4) fine sandy loam; weak, fine granular to single-grain structure; loose, soft; lower boundary gradual; pH 5.0.
BC	11 - 12	Brown (10YR 5/3) fine sandy loam; single-grained and weak, fine granular structure; lower boundary wavy, indistinct; pH 5.0.
C	12 - 23	Dark yellowish brown (10YR 4/4) sandy loam; single-grained and weak, fine granular structure; loose, friable; flat, subrounded gravels increasing in number with depth, finally grading into coarse, gray sandstone; pH 5.2.

External drainage is good and internal drainage tends to be excessive. Small amounts of gravel may be found throughout the profile.

The sandy material is 18 to 24 inches deep over bedrock. The mapping unit may contain pockets of Baie du Vin and Gallaway sandy loam soils. The sandy material varies from a fine sandy loam to a coarse loamy sand. The remnants of an Ae, or leached, horizon may be present. This depends on the depth of the virgin soil and on the depth of cultivation. The pH is 4.6 to 5.2 in virgin soils, but is often much higher because of liming and shelling.

General farming is carried out in certain areas; however, extensive areas along the coast have been abandoned.

Gravelly Phase

There are 491 acres of this soil in the surveyed area. It is similar to the sandy loam except that it has over 20 percent gravel by volume in one or more horizons, or has lenses of gravel in the profile. It tends to be somewhat more open and has a lower water-holding capacity than the sandy loam.

Stony Phase

There are 48 acres of this soil. It is similar to the sandy loam except for the large numbers of gray sandstone rocks or stones. They must be removed for cultivation.

Caissie Sandy Loam

There are 42 acres of Caissie soil, which is similar to the Chock-pish soils in depth, color and other characteristics. The main difference is that it has a horizon of reddish-brown (5YR 3/4) sandy loam that is very strongly cemented and impervious. The cemented layer usually occurs just below the cultivated layer, or the Ae horizon if one is present. It occasionally occurs farther down in the B horizon. The boundaries of the cemented layer are well defined and it may not be continuous.

The cemented layer restricts drainage and development of roots, and limits the use of this soil for deep-rooted crops. It is unsuitable for tobacco production.

Gallaway Sandy Loam

There are 5, 979 acres of this soil, or 13 percent of the soils surveyed. The depth to bedrock is 24 to 36 inches. The bedrock may be slightly weathered in the upper parts and cracks at right angles to the bedding planes. This weathers to flat, subrounded pebbles.

Flue-cured tobacco is grown successfully on this soil. Irrigation is necessary in most years and the exposed soil has a tendency to drift in the strong coastal winds.

The profile is described as follows:

<u>Horizon</u>	<u>Depth Inches</u>	
Ap	0 - 6	Brown (10YR 4/3) fine sandy loam; fine granular and single-grain structure; loose; boundary abrupt; pH 5.0.
Ae	6 - 8	Pinkish-gray (5YR 6/2) medium and fine sandy loam; sometimes in pockets up to four inches deep, often missing; moderate, medium, platy, breaking to fine granular and single-grain structure; lower boundary abrupt, broken; pH 5.0.
Bfh	8 - 9	Dark-brown (10YR 4/3) medium-fine sandy loam; weak granular and single-grain structure; loose; lower boundary abrupt, broken; pH 4.8.
Bf	9 - 11	Yellowish-red (5YR 4/8) medium sandy loam; weak granular and single-grain structure; loose; lower boundary diffuse, irregular; pH 5.0.
Bf2	11 - 12	Yellowish-red (5YR 4/6) gravelly sandy loam; weak granular and single-grain structure; loose; gravels of flat, subangular to rounded sandstone; pH 5.2.
BC	12 - 16	Dark grayish brown (10YR 4/2) gravelly, coarse sandy loam; weak granular and single-grain structure; slightly hard; pH 5.4.
C	16 - 28	Dark grayish brown (2.5YR 4/2) gravelly sandy loam; weak granular to single-grain structure; slightly hard; pH 5.4.

The underlying gray, coarse-grained sandstone weathers readily and is weak structurally.

This soil varies from a fine sandy loam to a gravelly, coarse sandy loam. Gravel content varies from none to over 20 percent and may occur throughout the profile or as lenses within one or more horizons.

Mixed farming is carried on in the area but drainage tends to be excessive and droughtiness is a problem. The soil requires irrigation as well as fertilizer and lime for satisfactory production.

Stony Phase

There are only 285 acres of this soil, near Kouchibouguac. This may be used for the same crops as the sandy loam if stones are removed. These stones are mostly large, rounded sandstones.

Gravelly Phase

This soil occupies 3,647 acres, or 8 percent of the soils surveyed. The gravel is of flat, rounded, gray sandstone pebbles or channers and is scattered throughout the profile or occurs as lenses within the profile. This soil has the same agricultural use as the sandy loam but is slightly more open and droughty.

Babineau Sandy Loam

This is similar to the Gallaway soils in parent material, color of horizons, and depth to bedrock. It has a dark reddish brown cemented layer, the cementing agents being iron and organic matter. There are 59 acres of this soil in the surveyed area. This soil is not suitable for flue-cured tobacco.

Gravelly Phase

Sixty-one acres of the gravelly phase were mapped.

Bransfield Sandy Loam

This soil occurs in two widely separated areas near Richibucto Village and Baie St. Anne. It occupies 129 acres. The topography is similar to that of the Baie du Vin sandy loam. The rock from which the parent material is derived is a series of red sandstone beds of Pennsylvanian age interbedded with gray sandstone beds.

The soil is suitable for growing tobacco but would require irrigation in most years and would drift where exposed.

The profile is described as follows:

Horizon	Depth Inches	
Ap	0 - 12	Dark reddish brown (5YR 3/4) fine sandy loam; strong, medium granular structure; hard; boundary smooth; pH 6.2.
Ae	12 - 16	Pinkish-gray (5YR 6/2) medium sandy loam; weak granular structure; slightly hard when dry; lower boundary wavy; pH 5.6.
Bfh	16 - 19	Yellowish-red (5YR 4/8) medium sandy loam; weak granular to single-grain structure; loose; lower boundary wavy; pH 6.2.

Horizon	Depth Inches	
Bf	19 - 25	Reddish-brown (5YR 4/4) medium sandy loam; weak, fine granular and single-grain structure; loose; lower boundary wavy; pH 6.2.
C	25 - 34	Dark reddish gray (5YR 4/2) medium sandy loam; single-grain structure; hard; lower boundary irregular; pH 6.6.
IIC	34 +	Reddish-gray sandstone.

This soil ranges from 24 to 36 inches in depth to bedrock and from a fine sandy loam to a loamy sand. The Ae horizon may or may not be present, depending on its thickness in virgin soil and the depth of plowing.

The land use is the same for this soil as for the Gallaway soils. The land has been abandoned in some areas.

Gravelly Phase

This soil differs from the sandy loam only in its content of gravel, which may occur throughout the profile or be confined to lenses in one or more horizons. The gravel is mostly reddish-gray sandstone but some gray sandstone may also be found. This soil is more open and porous than the non-gravelly phase. Only 48 acres of this soil were mapped.

Richibucto Sandy Loam

The Richibucto soil occurs in most areas surveyed but is most extensive between Kouchibouguac and Buctouche. It occupies an area of 4,095 acres, or 9 percent of the soils surveyed. It appears to be a water-deposited soil and is associated with both the Baie du Vin and Barrieau soils. It may be underlain by either red clay or bedrock at depths greater than three feet. The parent material was formed by weathering and wave action from the gray and red sandstones of the area.

Good crops of high-quality flue-cured tobacco have been grown on this soil. The soil has a strong tendency to drift and windbreaks and irrigation may be required for proper management and production.

The profile is described as follows:

<u>Horizon</u>	<u>Depth Inches</u>	
Ap	0 - 6	Dark-brown (10YR 4/3) fine sandy loam; fine granular and single-grain structure; soft; boundary smooth; pH 5.0 to 5.6.
Bfh	6 - 9	Strong-brown (7.5YR 5/6) fine to medium sandy loam; fine granular and single-grain structure; loose; lower boundary wavy; pH 5.0 to 6.0.
Bf	9 - 12	Yellowish-brown (10YR 5/6) sandy loam; weak granular and single-grain structure; loose; lower boundary diffuse; pH 5.2 to 6.2.
BC	12 - 19	Yellowish-brown (10YR 5/4) fine sandy loam; weak granular and single-grain structure; loose; lower boundary diffuse; pH 5.0 to 5.2.
C1	19 - 27	Brown to gray-brown (10YR 5/3 to 5YR 5/2) fine to medium sandy loam; weak granular and single-grain structure; loose; pH 5.2 to 5.8.
C2	27 - 36+	Dark grayish brown to brown (10YR 4/2 to 5/3) fine to coarse sandy loam; loose; pH 5.4 to 6.0.

The horizons vary in thickness, the Ap horizon ranging from 3 to 9 inches and the Bfh from 1 to 9 inches. The Bf horizon ranges in thickness from 3 to 6 inches and may occur from 4 to 18 inches below the surface. The BC horizon may be absent from the profile. Often a remnant of an Ae horizon is present. The sand grains vary in size.

At present this soil is being used for mixed farming. It tends to be droughty and requires fairly heavy fertilizer applications.

Gravelly Phase

The gravelly phase is similar to the sandy loam except that gravel may occur throughout the profile or in lenses or layers in one or more horizons. The solum is considerably deeper than for the sandy loam because of the influence of gravel on permeability. Land use is similar to that of the sandy loam. This soil occupies 578 acres.

Kouchibouguac Sandy Loam

This soil, including its gravelly phase, is similar to Richibucto sandy loam except that it has a cemented (Bfhc) layer. The cementing materials of this reddish-brown horizon are iron and organic compounds.

This cemented layer restricts percolation and the depth of the rooting zone. In small areas of these soils intermixed with others, the hardpan can be broken by deep plowing or chiseling. These soils occupy 90 and 6 acres respectively.

The hardpan prevents this soil from being suitable for growing tobacco.

Aldouane Sandy Loam

The Aldouane sandy loam occupies 394 acres. It occurs on the same topography and at the same elevations as Richibucto sandy loam. The parent material was formed by weathering of red sandstone beds, which are interbedded with gray sandstone of Pennsylvanian age.

This soil is capable of growing good-quality tobacco. It will require irrigation, and, in large fields, protection from winds to prevent drifting.

The profile is described as follows:

<u>Horizon</u>	<u>Depth Inches</u>	
Ap	0 - 12	Dark-brown (7.5YR 4/4) sandy loam; medium granular structure; firm; boundary smooth; pH 5.2.
Bf	12 - 18	Reddish-brown (5YR 4/4) sandy loam; medium granular and single-grain structure; firm; lower boundary smooth; pH 5.8.
C	18 - 36	Reddish-brown (5YR 4/3) sandy loam to loamy sand; single-grain structure; loose; pH 6.2.

The number of B horizons varies and the red color of the parent material tends to mask their presence. A yellowish-red Bfh horizon is often found. The cultivated layer is not normally as thick as indicated, and often there is a remnant of an Ae horizon. The texture varies from a fairly coarse loamy sand to a fine sandy loam. The gravels or pebbles are subrounded, flat, reddish sandstone.

Land use and land-use problems are similar to those of the Richibucto soils.

Gravelly Phase

This phase differs from the sandy loam in having gravel content of over 20 percent. As in other gravelly soils the gravel may occur throughout the profile or as lenses in one or more horizons. Only 61 acres of this soil were mapped.

Guimond Gravelly Sandy Loam

This soil occupies 774 acres and occurs in the Kouchibouguac area. Some sites appear to be of morainic origin and some appear to be marine beaches. The parent material was formed mainly from the soft gray and red Pennsylvanian sandstone of the region. A few fragments of slate and quartz occur.

This soil can be used for growing tobacco, but irrigation may be needed in most years. The gravel should be no impediment.

The profile is described as follows:

Horizon	Depth Inches	
Ap	0 - 9	Dark-brown (10YR 4/5) gravelly, medium sandy loam; platy, breaking to medium granular structure; slightly hard; pH 5.2 to 6.2.
Bf	9 - 15	Strong-brown (7.5YR 5/6) gravelly, fine sandy loam; moderate granular structure; soft; upper and lower boundaries smooth; pH 5.2 to 6.2.
BC	15 - 24	Pale-brown (10YR 6/3) gravelly sandy loam; loose; pH 5.4 to 6.4.
C	24 - 36	Brown (10YR 5/3) coarse, gravelly sandy loam; loose, open; pH 5.6 to 6.6.

Below 36 inches there is usually stratified gravel and sand.

The Guimond soil varies in texture and gravel content in the upper horizons. The remnants of an Ae horizon may be observed just below the cultivated layer. The depth to the well-stratified sand and gravel varies considerably.

This soil is being used for mixed farming. It tends to be droughty. The presence of gravel helps to stabilize the soil from wind drifting.

Cocagne Gravelly Sandy Loam

This soil differs from the Guimond soil in having a Bfhc, or cemented, horizon. This layer is dark reddish brown and is usually just below the Ae horizon. The cementing agents are iron and organic compounds. The cemented layer is impermeable and restricts water percolation and penetration of roots.

Sand Dunes

Sand dunes are low hills of windblown sand. They occur along the seashore where strong onshore winds pick up the wave-deposited sand and blow it inland or form offshore bars. They do not appear to be moving inland appreciably and are sparsely covered by coarse grasses. They have no agricultural value.

GLOSSARY

Boundary - See Horizon boundary.

Cation exchange capacity - A measure of the absorptive capacity of a soil for cations: the amount of cations that can be absorbed, in milliequivalents per 100 grams of soil.

Channer - A flat rock fragment 3 - 10 inches long.

Cobble - A rock fragment 3 - 10 inches in diameter.

Consistence (Soil) - The mutual attraction of the particles in a soil mass, or their resistance to separation or deformation. It is described in terms such as loose, soft, friable, firm, hard, sticky, plastic and cemented.

Depth - Distance below the surface, e.g., depth at which a horizon occurs.

Eluvial horizon - A horizon from which material has been removed in solution or water suspension.

Gravel - Rock fragments from two millimeters to three inches in diameter.

Horizon - A layer in the soil profile approximately parallel to the land surface with more or less well defined characteristics that have been produced by soil-forming processes. The main organic horizons are as follows:

L - An organic layer characterized by an accumulation of organic matter in which the original structures are definable.

F - An organic layer characterized by an accumulation of partly decomposed organic matter in which the original structures are discernible with difficulty.

H - An organic layer characterized by an accumulation of decomposed organic matter in which the original structures are undefinable.

The main mineral horizons are as follows:

- A - A mineral horizon or horizons at or near the surface in the zone of maximum removal of materials in solution and suspension and/or maximum in situ accumulation of organic matter. They include (1) horizons in which organic matter has accumulated as a result of biological activity (Ah); (2) horizons that have been eluviated of clay, iron, aluminum and/or organic matter (Ae); (3) horizons dominated by 1 and 2 above but transitional to the underlying B or C horizon (AB or A and B); (4) horizons markedly disturbed by cultivation or pasturing (Ap).
- B - A mineral horizon or horizons characterized by one or more of the following: (1) an illuvial enrichment (exclusive of dolomite or salts more soluble in water) of silicate clay, iron, aluminum, or organic matter (Bt, Bf, Bh, Bfh); (2) a concentration of weathering products believed to have been formed in situ (Bt); (3) the removal of dolomite and salts more soluble in water (Bm); (4) an oxidation of sesquioxides that give a conspicuously darker, stronger, or redder color than overlying and/or underlying horizons in the same sequum (Bmf); (5) a prismatic or columnar structure.
- C - A mineral horizon or horizons affected little by the soil-forming processes operative in A and B, excepting (1) the process of gleying and (2) the accumulation of carbonate and salts more soluble in water; assumed to be the material from which the solum has developed.
- IIC - A horizon unlike the material from which the overlying soil has been formed.

The mineral horizons described in this report are denoted by lower-case suffixes as follows:

- e - A horizon characterized by the removal of clay, iron, aluminum or humus and usually lighter colored than the layer below.
- f - A horizon enriched with hydrated iron.
- h - A horizon enriched with organic matter. It must show at least one Munsell unit of value darker than the horizon immediately below.

Horizon boundary - Boundaries vary in distinctness and in relief. The distinctness depends partly on the contrast between the horizons and partly on the thickness of the boundary itself. Boundaries increase in thickness as follows:

Abrupt - Less than 1 inch
Clear - 1 to 2 inches
Gradual - 2 1/2 to 5 inches
Diffuse - More than 5 inches

The relief of horizon boundaries is described as follows:

Smooth - Nearly a plane
Wavy - In pockets wider than deep

Irregular - Parts of the horizon unconnected with other parts

Illuvial horizon - A horizon that has received material in solution or suspension from some other part of the soil.

Hygroscopic moisture - The water lost from air-dry soil heated at 105°C until the weight is constant. See Methods.

Marine clay - Clay deposited by the sea.

Mottles - Irregularly marked spots or streaks, usually of rust color. They are described in terms of abundance, contrast and size.

Outwash - All detritus swept out of a melting glacier by meltwater streams.

Parent material - The unaltered or practically unaltered mineral material from which the solum develops.

Ped - An individual natural soil aggregate.

Permeability - Readiness with which air and water can pass through soil.

pH - The intensity of acidity or alkalinity expressed as the logarithm of the reciprocal of the H ion concentration. With this notation, pH 7 is neutral; lower values indicate acidity and higher values alkalinity.

Reaction (soil) - The acidity or alkalinity of the soil. Acidity is characterized as follows:

Slightly acid	pH 6.1 - 6.5
Medium acid	5.6 - 6.0
Strongly acid	5.1 - 5.5
Very strongly acid	4.5 - 5.0
Extremely acid	below 4.5

Relief - The elevation or inequalities of the land surface when considered collectively. Minor inequalities are referred to as microrelief.

Shelling - Application of oyster or other shells to the soil as a source of calcium carbonate.

Solum - The part of the soil profile that is above the parent material and in which the processes of soil formation are active. It comprises the A and B horizons.

Structure - Arrangement of primary soil particles into aggregates, which are separated from adjoining aggregates by surfaces of weakness.

The following structures are mentioned in this report:

Blocky - In block-like aggregates with sharp, angular corners.

Crumb - In porous, spheroidal aggregates.

Fragmental - In large, irregular polyhedral aggregates with sharp angular corners and without consistent orientation of faces, which may be plane or curved.

Granular - In spheroidal aggregates, relatively nonporous.

Platy - In plate-like aggregates.

Pseudoplaty - In thick and irregular, plate-like aggregates.

Single-grained - Each grain by itself as in sand.

Structure class - Refers to size of ped.

Platy or

granular - Fine, 2 mm.

Medium, 2 - 5 mm.

Coarse, 5 - 10 mm.

Blocky - Fine, 10 mm.

Medium, 10 - 20 mm.

Coarse, 20 - 50 mm.

Structure grade - Degree of distinctness of development of aggregates: weak, moderate, strong.

Texture - The percentages of sand, silt and clay in a soil determine its texture. Particles from .2 to .05 mm. in diameter are called sand, those from .05 to .002 mm. are called silt, and those less than .002 mm. are called clay.

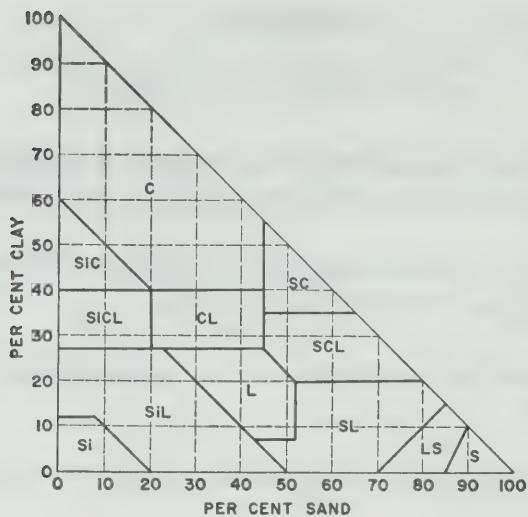


Figure 4.—Percentages of clay and sand in the main textural classes of soils; the remainder of each class is silt. See Toogood, J.A., Can. J. Soil Sci. 38:54-55, 1958. The limits between classes are as in Soil Survey Manual, U.S.D.A. Handbook 18, 1951.

Thickness - Distance between opposite surfaces, e.g., thickness of a horizon.

Till - Glacial drift deposited by and underneath the ice with little or no transportation by water.

Topography - General configuration of the land surface. The following classes are used in this report:

Flat - Level or nearly level.

Rolling - Slopes irregular, moderate.

Undulating - Slopes irregular, gentle.

APPENDIX

ANALYTICAL METHODS

Because the methods of analysis changed during the study, more than one procedure is mentioned for some of the determinations.

Reaction (pH) - Beckman glass electrode. Thick paste method.
W. T. McGeorge, Soil Sci. 59: 231-237, 1945.

Mechanical analysis - Hydrometer method. G.G. Bouyoucos, Soil Sci. 42: 225-230, 1936.

Hygroscopic moisture - by heating at 105°C until the weight remained constant.

Loss of ignition at 450°C - Chemical methods of soil analysis, Can. Dept. Agr., Sci. Serv., Div. Chem., p. 17, 1949.

Loss of ignition at 850°C - By heating at 850°C for two hours.

Total carbon - C.J. Schollenberger, Soil Sci. 29: 53-56, 1945.

Total nitrogen - Association of Official Agricultural Chemists, 5th ed., 1940. Selenium granules used as a catalyst. Ammonia collected in standard acid.

Total phosphorus - Digestion with magnesium nitrate precipitated as potassium pyrophosphate. Association of Official Agricultural Chemists, 5th ed., 1940.

Total potassium - Association of Official Agricultural Chemists, 5th ed., 1940.

Total silica and sesquioxides - Association of Official Agricultural Chemists, 5th ed., 1940.

Total calcium and magnesium - Association of Official Agricultural Chemists, 5th ed., 1940.

Exchange capacity - A 2-g. sample was placed in a 15-ml. centrifuge tube with 4 ml. of normal ammonium acetate solution, pH 7. Adsorbed ammonia was displaced with NaCl solution and the extract steam-distilled with 1N NaOH in micro-Kjeldahl distilling apparatus. Ammonia was collected in boric acid and titrated with standard acid.

Exchangeable calcium, magnesium and potassium - Chemical methods of soil analysis, Can. Dept. Agr., Sci. Serv., Div. Chem., p. 53-59, 1949.

Readily available phosphorus - E. Truog, J. Am. Soc. Agron. 22:874-882, 1930.

Table 4.—Map Numbers and Symbols, and Acreages of the Soils Surveyed

Soil name and map symbol	Map number and name							Total
	62 Baie du Vin—Baie St. Anne	71 Baie du Vin Mills—Pt. Sapin	80 Richibucto—Kouchibouguac	89 Richibucto River—Rexton	90 Richibucto—Buctouche Baie	100 Buctouche-Cocagne—St. Anthony	110 Shediac—Notre Dame	
Baie du Vin B.V.S.	17		58	957	590	1074	138	2834
Baie du Vin Gravelly B.V.S.G.				342				342
Chockpish B.V.M.	118	51	398	1184	1886	461	328	4426
Chockpish Gravelly B.V.M.G.				240	251			491
Chockpish Stony B.V.M.S.T.			48					48
Caissie B.V.M.O.				42				42
Escuminac B.V.M.R.	40				26	101		167
Galloway B.V.D.	413	230	1246	984	1702	1379	25	5979
Galloway Gravelly B.V.D.G.	344		2125	840	338			3647
Galloway Stony B.V.D.S.T.			285					285
Babineau B.V.D.O.			32		27			59
Babineau Gravelly B.V.D.G.O.			61					61
Bransfield B.V.D.R.	91				38			129
Bransfield Gravelly B.V.D.G.R.	48							48
Barrieau B.A.S.	168		1533	2304	2144	5682	995	12826

Table 4.—Map Numbers and Symbols, and Acreages of the Soils Surveyed (Cont'd)

Soil name and map symbol	Map number and name							Total
	62 Baie du Vin Baie St. Anne	71 Baie du Vin Mills Pt. Sapin	80 Richibucto- Kouchibouguac	89 Richibucto River- Rexton	90 Richibucto- Buctouche Bay	100 Buctouche-Cocagne- St. Anthony	110 Sheldiac- Notre Dame	
Bretagneville B.A.M.	227	11	2070	931	357	338	100	4034
Bretagneville Gravelly B.A.M.G.					11			11
St. Charles B.A.M.O.			42					42
Buctouche B.A.D.	69	30	842	64	237	322	53	1617
Richibucto R.R.		32	854	773	1495	730	211	4095
Richibucto Gravelly R.G.			78	34		466		578
Aldouane R.R.			24	22	186	162		394
Aldouane Gravelly R.R.G.				27		34		61
Kouchibouguac R.O.			14	10		66		90
Kouchibouguac Gravelly R.G.O.				6				6
Guimond G.			566	69	139			774
Cocagne G.O.			27					27
Sand Dunes Sand Dunes			390		1342	461		2193

Table 5.—Chemical Analyses of Some Representative Soils

Soil	Horizon	pH	Loss on ignition			Total content, % ¹						P readily soluble ppm.	Capacity Ca	Mg	K	Exchange values, me./100/g.
			450° C	850° C	Carbon	N	P	Ca	Mg	K	SiO ₂					
Richibucto	Ap	5.3	5.15	2.09	0.154							10.24	135.2	2.40	0.221	0.904
Richibucto gravel	Ap	5.0	4.78	1.98	0.148							7.95	100.8	2.00	0.123	0.886
Kouchibouguac	Ap	5.5	3.10	1.39	0.065							10.52	78.3	2.75	0.732	0.923
Aldouane	Ap	5.1	3.87	1.77	0.094							14.50	107.5	1.62	0.098	0.872
Baie du Vin	Ap	4.9	5.93	2.36	0.150							14.50	57.2	1.55	0.083	0.902
Chockpish	Ap	5.0	4.52	1.96	0.106							12.05	115.5	2.02	0.249	0.900
Gallaway	Ap	4.9	5.37	1.95	0.112							6.32	40.3	0.68	0.147	0.827
Escuminac	Ap	5.3	3.62	1.74	0.117							18.60	136.2	3.91	0.237	0.860
Baie du Vin gravel	Ap	6.0	4.64	1.64	0.112							8.52	418.0	0.80	0.202	1.13
Barrieau	Ap	4.8	4.67	1.71	0.120							15.35	70.9	2.63	0.255	0.943
Bretagneville	Ap	5.8	7.19	3.02	0.182							9.12	72.3	12.15	0.645	0.895
Buctouche	Ap	5.7	5.75	2.58	0.135							3.80	49.6	5.96	0.131	0.926
Guimond	Ap	4.9	4.30	1.92	0.103							5.68	108.0	1.62	0.660	0.896
Barrieau	Ap	5.00	7.32	0.137	0.156	0.131	0.400	1.00	74.33	15.39						
L-H	L-H	4.80	77.30	0.736	0.031	0.410	0.398	0.278	17.64	3.51						
Ae	Ae	4.08	1.80	0.024	0.006	0.190	0.154	0.782	87.75	7.54						
Bfh	Bfh	5.34	10.75	0.143	0.112	0.143	0.452	0.910	67.60	18.75						
Bf	Bf	5.31	4.90	0.044	0.003	0.252	0.683	1.397	72.65	18.93						

Table 5.—Chemical Analyses of Some Representative Soils (Cont'd)

Soil	Horizon	pH	Loss on ignition	Total content, % ¹						P readily soluble PPM.	Capacity Ca	Mg	K	Exchange values, me./100/g.
				450° C	850° C	Carbon	N	P	Ca					
Barrieau	C	4.04	3.88	0.030	0.003	0.070	0.739	1.530	72.33	21.05				
	Ap	5.05	4.41	0.144	0.024	0.211	0.389	0.861	74.52	16.30				
	Ap	6.68	7.67	0.159	0.053	0.296	0.323	0.784	76.52	13.87				
	Ap	5.22	6.83	0.164	0.070	0.105	0.415	0.760	76.78	14.07				
	Ap	5.18	6.82	0.131	0.033	0.088	0.426	0.492	77.17	14.57				
	Ap	5.48	6.28	0.120	0.057	0.341	0.274	0.694	79.52	11.59				
	Ap	5.60	7.64	0.130	0.036	0.114	0.526	0.859	74.98	15.69				
	Ap	5.42	8.25	0.205	0.048	0.088	0.194	0.836	76.50	13.31				
	Ae	4.72	0.93	0.040	0.005	0.120	0.094	0.368	93.22	3.92				
	Bfh	5.44	6.08	0.041	0.053	0.231	0.260	0.756	77.23	15.65				
Chockpish	Bf	5.69	2.59	0.010	0.005	0.208	0.343	0.657	83.21	12.10				
	C	6.48	1.16	0.001	0.009	0.275	0.272	0.941	84.50	10.02				
	L+H	3.78	81.04	1.086	0.088	0.373	0.195	0.284	16.53	1.27				
	Ae	4.34	1.48	0.018	0.005	0.181	0.318	0.603	89.64	7.39				
	Bfh	5.91	4.08	0.024	0.075	0.253	0.588	0.676	74.87	16.98				
	Bf	6.00	2.66	0.014	0.028	0.319	0.569	1.001	77.43	14.32				
	C1	5.52	2.10	0.006	0.017	0.353	0.624	1.102	77.79	14.84				
	40-52' C2	5.60	2.11	0.003	0.016	0.266	0.589	0.820	77.87	15.55				

¹ All results based on oven-dry weight.

Table 6.—Physical Analyses of Some Representative Soils

Soil	Horizon	Gravel or sand, %			Sand, %			Silt, %			Clay, % Less than .002 mm.
		Coarse gravel	Fine gravel and very coarse sand	Total	Very coarse 2-1 mm.	Coarse 1-0.5 mm.	Medium 0.5-0.25 mm.	Fine 0.25-0.1 mm.	Very fine 0.1-0.05 mm.	Total	
Richibucto	Ap ¹			0.2	2.8	8.3	28.0	33.7	72.9	17.1	10.0
Richibucto gravel	Ap			1.0	37.0	21.7	19.5	3.9	83.4	8.7	7.9
Kouchibouguac	Ap			0.1	14.5	25.1	27.1	4.2	81.0	11.1	7.9
Aldeouane	Ap			0.4	4.0	6.2	44.9	18.1	73.7	11.8	14.5
Baie du Vin	Ap			0.6	13.6	14.8	26.6	9.6	65.2	21.3	13.5
Chockpish	Ap			0.4	6.6	15.9	37.5	9.2	69.6	15.0	15.4
Galloway	Ap			3.0	33.4	23.4	11.1	4.3	75.2	14.9	9.9
Escuminac	Ap			2.2	25.2	22.4	15.4	6.6	71.6	16.0	12.4
Baie du Vin gravel	Ap			1.0	20.0	17.6	24.3	8.3	71.3	16.7	12.0
Barrieau	Ap			2.0	15.8	13.2	17.1	9.0	57.1	22.8	20.1
Bretagnerville	Ap			0.6	12.8	12.5	25.8	16.4	68.1	17.5	14.4
Buctouche	Ap			0.3	4.5	7.9	40.9	21.6	75.2	15.5	9.3
Guimond	Ap			1.6	33.2	19.6	12.3	4.5	71.2	7.9	10.9
Barrieau	Ap			3.3	5.7	9.0			52.0	26.2	21.8
	Ae			3.8	1.7	5.5			62.6	28.6	8.8
	Bf			7.5	6.1	13.6			57.8	31.4	10.8
	Bf			11.2	6.4	17.6			43.6	33.6	22.8

Table 6.—Physical Analyses of Some Representative Soils (Cont'd)

Soil	Horizon	Gravel or sand, %			Sand, %			Silt, 0.5- .002 mm.	Clay, % Less than .002 mm.	
		Coarse gravel	Fine gravel and very coarse sand	Total	Very coarse 2-1 mm.	Coarse 1-0.5 mm.	Medium 0.5-0.25 mm.	Fine 0.25-0.1 mm.	Very fine 0.1-0.05 mm.	
Barrieau	C	5.3	2.1	7.4						42.0
	A _P	1.3	4.4	5.7						48.2
	A _P	2.3	5.6	7.9						52.0
	A _P	3.9	5.9	9.8						58.4
	A _P	7.3	6.7	14.0						59.6
	A _P	6.1	8.6	14.7						65.6
	A _P	2.2	4.1	6.3						49.6
	A _P	16.3	11.6	27.9						66.4
	A _e									82.9
	B _{fh}									90.7
Chockpish	B _f									96.5
	C									98.9
	A _e	2.0	7.0	9.0						75.2
	B _{fh}	2.2	8.3	10.5						86.3
	B _f	6.3	17.5	23.8						93.3
	C1									95.9
40°52" C2										96.9

¹Cultivated layer.

